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1/5

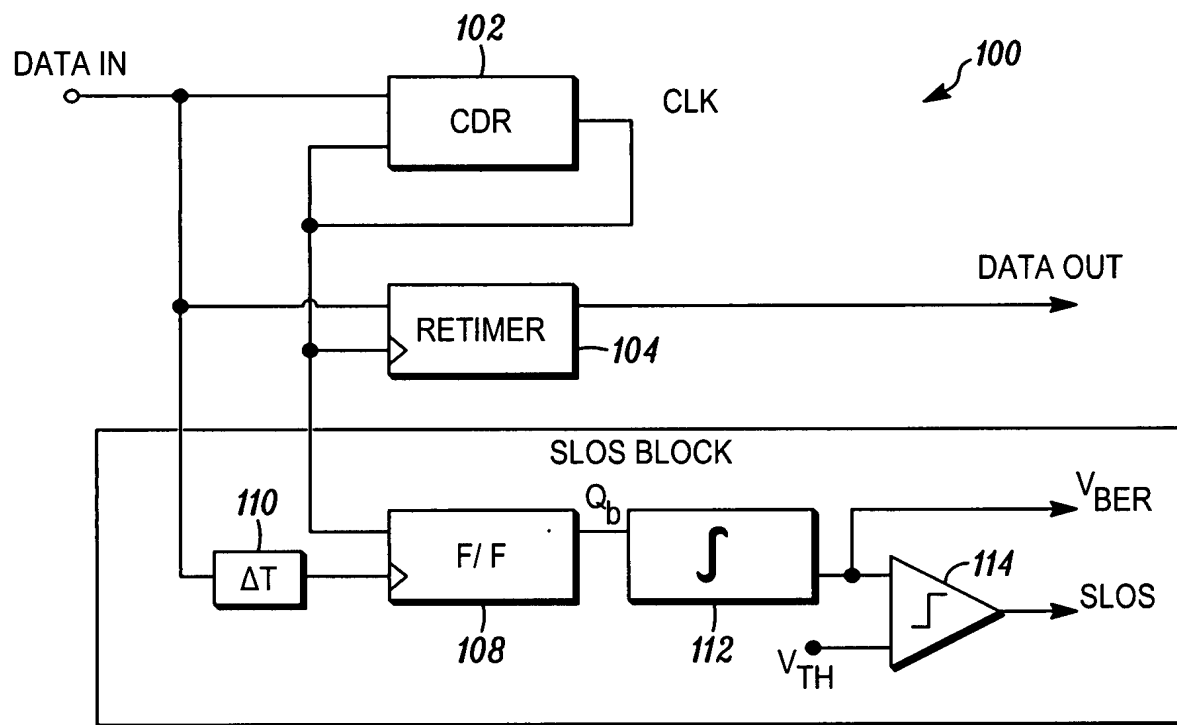


FIG. 1



0033-081001

2/5

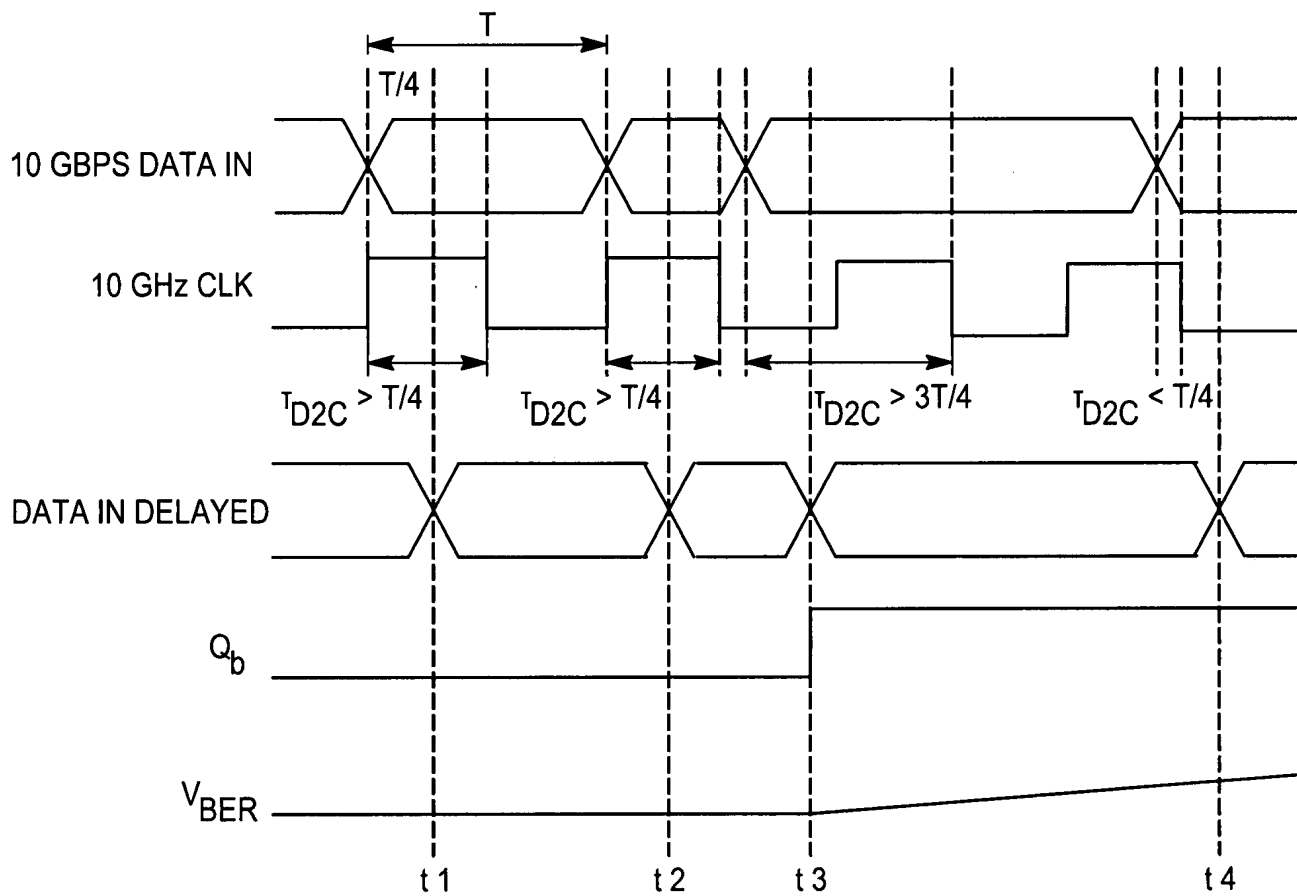


FIG. 2

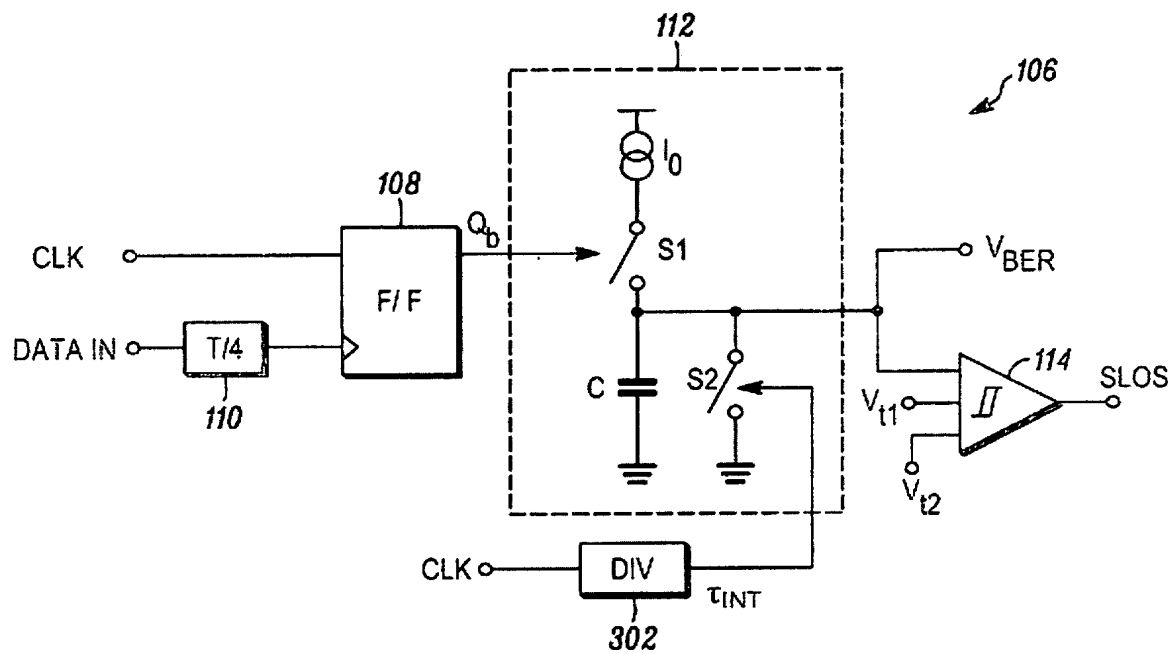


FIG. 3

The diagram illustrates a 1T1R1C1 1T1R1C1 array element, divided into two main functional blocks: 110 and 108.

Block 110 (Left): This block contains a differential pair of PMOS transistors. The gates of these transistors are connected to a common input signal V_{IN} . The source of the left PMOS transistor is connected to ground through a current source V_{BIAS} . The source of the right PMOS transistor is connected to ground through a current source V_{IN}^- . The drains of the PMOS transistors are connected to a common output node, which is also connected to a resistor $RL1$ and a resistor $RL2$. The gates of the PMOS transistors are also connected to a common input signal V_{IN}^+ .

Block 108 (Right): This block contains a differential pair of NMOS transistors. The gates of these transistors are connected to a common input signal V_{IN} . The source of the left NMOS transistor is connected to ground through a current source V_{BIAS} . The source of the right NMOS transistor is connected to ground through a current source V_{IN}^- . The drains of the NMOS transistors are connected to a common output node, which is also connected to a resistor $RL1$ and a resistor $RL2$. The gates of the NMOS transistors are also connected to a common input signal V_{IN}^+ .

The output of block 110 is connected to the input of block 108, and the output of block 108 is connected to the input of block 110, forming a crossbar array structure.



0033-081001

5/5

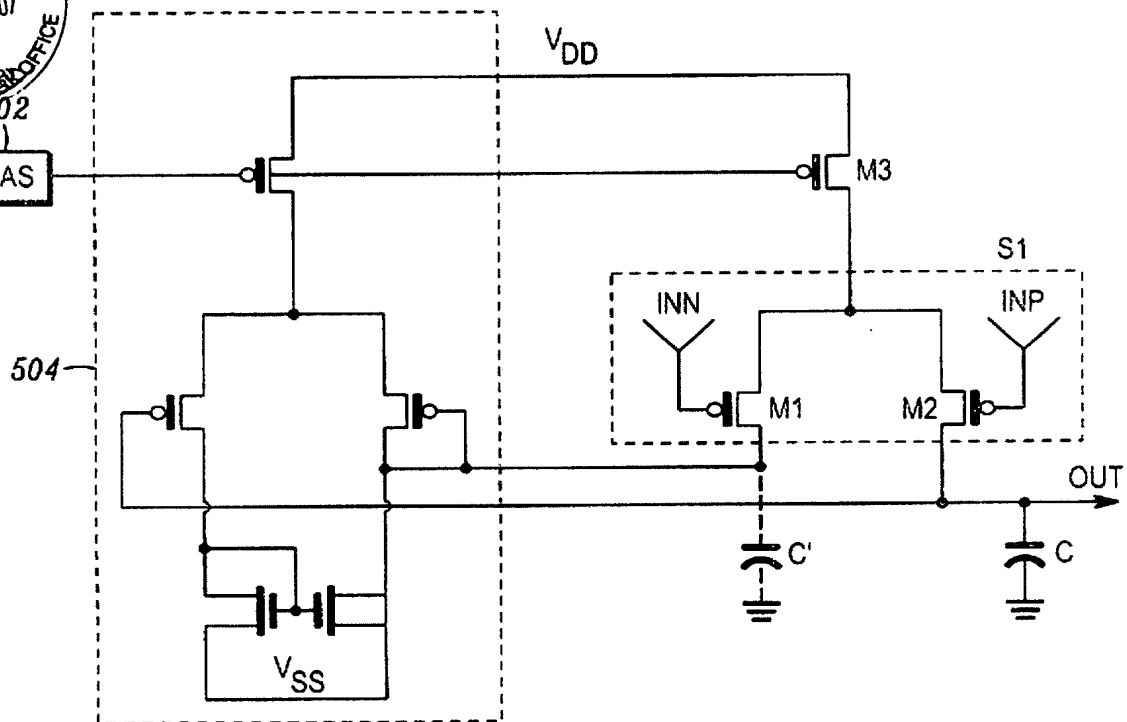


FIG. 5

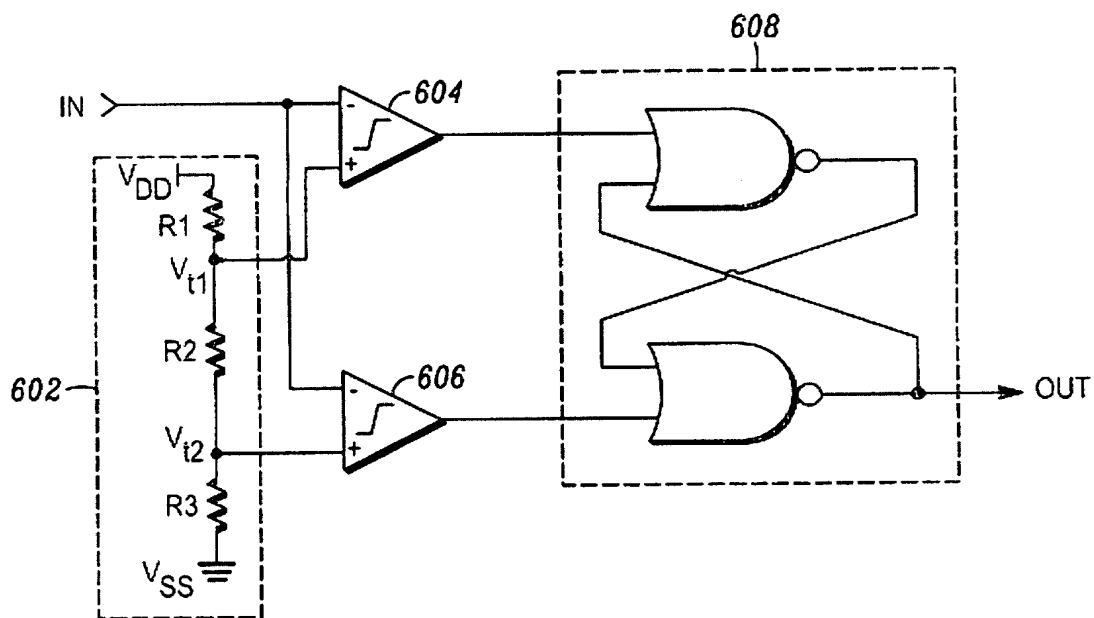


FIG. 6